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ASEPTIC NECROSES OF CARPAL BONES

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The necrosis of os lunatum is the most common aseptic necrosis of carpal bones. Aseptic necroses of os scaphoideum and os capitatum are rare while those of the rest carpal bones are casuistic rarity.

Aseptic necroses of carpal bones occur most often in the age between 16 and 40 years. According to our own material, males are by two times more frequently affected than females. Incidence rate in Europe amounts between 0,3 and 0,7 % of the population.

In Kienboeck's opinion, necrosis of carpal bones is most often a result from disturbances of the nutrition based on injury (luxation and/or fracture). However, there is an opposite concept based on the fact that Kienboeck's and Preiser's diseases both occur extraordinarily rare after perilunar or transscaphoperilunar luxation. The causative relation between chronic trauma and aseptic necroses of carpal bones seems more verisimilar. Steinhauser et al. have experimentally proved that the position of the hand in the wrist joint (extension or hyperextension; dorsi-flexion) leads to a sharp reduction of blood supply to carpal bones. Koken accepts that dorsal vessels are completely closed in "pincers" of the radius and os capitatum in case of wrist dorsal flexion. We observed an aseptic necrosis of os scaphoideum (Preiser's disease) in a case with thumb hypoplasia. Such a case is reported by Kavai et al., too.

The concept dominates that injuries, vibrational disease and the state of hyperextension in the carpal joint play a cardinal role in the etiopathogenesis of aseptic necroses of carpal bones. We observed during a 5-year period 18 aseptic necroses of carpal bones. There were 14 necroses of os lunatum, 3 ones - of os scaphoideum, and one - of os capitatum. There was a simultaneous affection of both os lunatum and os scaphoideum in two cases.

Clinically, after a hypothetic interval of some months between necrosis appearance and detection of roentgenological signs, pain and slightly expressed exsudation in the joint occurs. Gradually, pains intensify accompanied by reduced grip capacity. Trueta explains these pains by the compression of intraosseal nervous fibres.

There exist many operation techniques (more than 20) that confirms the present controversy concerning the choice of a therapeutic approach. The operations used in our Department of Orthopedics

and Traumatology can be divided in 4 groups as follows:

a) "level-operations" aiming at correcting the distal radioulnar discrepancy;

b) removing of os lunatum and its replacement by neighbouring fascial and tendinous structures, osseous grafts, prostheses, etc;

c) operations aiming at bone preserving by blood supply improvement;

d) stabilizing operations - arthrodeses, resections, etc.

In the present study we analyze the operations of the third group as follows:

1. Operation of Hori et al. (implantation of vascular bundle consisting of a. metacarpea dorsalis II, a vein and perivascular connective tissue in the affected bone) - one case;

2. Operation of Braun (implantation of bone autograft from the distal metaphysis of radius on pedicle from m. pronator quadratus) - two cases;

3. Operation of Erbe-Boehm - a modification of Beck (implantation of os pisiforme on vascular pedicle) - six cases;

4. Operation of Miyadji (vascularization of os lunatum by implantation of a. metacarpea dorsalis II together with bone lamella from the second metacarpal bone) - one case.

After operation the hand is immobilized for one month in plaster longette. A loading is permitted after the 5th month. Patients are followed-up for 6 months to 3 years after surgery. Roentgenologically, osseous structure is improved in 5 patients. Six patients report a considerable improvement - their pains diminished and movement volume in the wrist joint increased. Satisfactory results are obtained in 3 cases but a poor one - in one case.

On the basis of our data we can conclude that operations aiming at preserving os lunatum or os scaphoideum by their vascularization in the treatment of Kienboeck's and Preiser's diseases are of undoubted importance. The optimal period for Beck's operation is the initial stage (I and II degree of lunatomalacia) prior to collapse of the bone. That is why we apply standard and enlarged roentgenological examinations as well as scintigraphy with Technetium in order to clarify the stage of the disease. Our experience is small but encouraging, indeed.